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07278

PATENT TRADEMARK OFFICE

Docket No: 9637/0L307

IN THE UNITED STATES PATENT AND TRADEMARK OFFICEIn re Application of: **KOBAYASHI et al.****RECEIVED**

Serial No.: 09/888,073

Art Unit: 3725

OCT 21 2002

Confirmation No.: 6606

TECHNOLOGY CENTER H3700

Filed: June 22, 2001

Examiner: SELF, Shelley M.

For: **PRESS MACHINE**PENDING CLAIMS

Hon. Commissioner of Patents and Trademarks
Washington DC 20231

October 15, 2002

3. (Amended) A press machine, comprising:
drive means for operating a slide in a cycle;
a press center on said slide;
a first and a second guide member on said press machine;
a line between said first and said second guide members passing through said press center;

said slide receiving a driving force from said drive means, and alignment said first and said second guide members with said press center eliminating rotational forces upon said slide and guiding said slide in said cycle along a common centerline, thereby increasing press machine precision, operational life, and rigidity;

a frame supporting said drive means and said slide;

said frame having a continuous shape symmetrical about said press center;

a crank shaft and a main gear in said drive means;

said main gear having a position eccentric about said crank shaft;

a first link extending perpendicular from said crank shaft;

a second link rotatably couples said first link to said main gear and increases and transmits said drive force from said main gear to said crank shaft whereby said slide operates in said cycle;

a top and a bottom dead center position on said slide;

said main gear rotatably disposed on said frame

a gear section of said drive shaft operably joined to said main gear;

said crank shaft rotatably disposed on said frame;

an eccentric section on said crank shaft;

a connecting rod operably coupling said crank shaft to said slide;

a first angle operably defined between said first and second link whereby said first angle is at a maximum at said bottom dead center position and at a minimum at said top dead center position; and

a rotation axis of said main gear and a rotation axis of said crank shaft are eccentric

along a common center line, whereby a speed of said slide is at a minimum at said bottom dead center and a maximum at said top dead center position thereby increasing a pressing force at said bottom dead center position.

4. (Amended) A press machine, according to claim 3, further comprising:

at least a first and a second side on said slide;

said first and second side operable between each respective said first and second guide members;

at least a first and a second slide side gib;

each said first and second slide side gib on respective said first and said second side of said slide;

at least a first, a second, and a third mating surface on each respective said first and said second slide side gibs;

at least a front, a side, and a rear liner on each respective said first and second guide members; and

each said front, side, and rear liners in guiding contact with each respective said first, second, and third mating surfaces whereby said slide operates vertically along said common centerline and said press center and prevents said rotational force.

5. (Twice Amended) A press machine, comprising:

a frame;

a flywheel;

a drive mechanism;

a slide in said frame;

said slide operating along a first centerline of said frame;

a press center on said slide;

said press center aligned with said first centerline and said frame;

only a first and a second guide member on said press machine;

a line between said first and said second guide member passing through said press center along a common centerline;

said drive mechanism operating said slide along said press center;

said slide and said frame symmetrical about said press center and said first centerline; and

said frame being continuous and symmetrical about said first centerline whereby said frame resists a rotational force during a pressing operation and eliminates an operational gapping risk.

6. (Amended) A press machine, according to claim 5, further comprising:

a first and a second side member on said press machine;

said first and second side members disposed symmetrical about a second centerline of said frame;

a crown member in said frame joining said first and second side members;

a drive mechanism holding section in said frame;

said crown member and a drive mechanism holding section supporting said drive

mechanism;

a bed member; and

said bed member connecting said first and second side members below said slide whereby said first and said second side member rigidly joined and said frame is increased in strength and rigidity thereby minimizing an operational gapping and increasing a pressing precision.

7. (Amended) A press machine, according to claim 6, further comprising:

each said first and second guide member disposed symmetrical about said press center and said first centerline;

each said first and said second guide members supporting said slide;

at least a first liner member in each said first and second guide members;

a first and a second slide side gib on said slide;

each said first and second slide side gib in guiding contact with each said first liner on each respective said first and second members; and

said first and second members and each said first liner engaging said slide and allowing said slide to operate in said press machine, whereby operational gapping is prevented and said pressing precision is improved.

8. A press machine, according to claim 7, further comprising:

a drive shaft in said drive mechanism;

said slide having a top and a bottom dead center position;

said drive shaft rotatably disposed on said frame;
a gear section on said drive shaft operable joined to said flywheel;
a main gear rotatably disposed on said frame;
said main gear meshing with said gear section;
a crank shaft rotatably disposed on said frame;
an eccentric section on said crank shaft;
a connecting rod operably coupling said crank shaft to said slide;
a first link fixed to a first end of said crank shaft;
said first link perpendicular to said crank shaft;
a second link operably connecting said first link to said main gear;
a first angle operably defined between said first and second link whereby said first angle is at a maximum at said bottom dead center position and at a minimum at said top dead center position; and
a rotation axis of said main gear and a rotation axis of said crank shaft are eccentric along a common center line, whereby a speed of said slide is at a minimum at said bottom dead center and a maximum at said top dead center position thereby increasing a pressing force at said bottom dead center position.

9. (New) A press machine, comprising:

a frame;
a flywheel;
a drive mechanism;

a drive shaft in said drive mechanism and rotatably disposed on said frame;
a gear section on said drive shaft operable joined to said flywheel;
a main gear rotatably disposed on said frame and meshing with said gear section;
a slide in said frame having a top and a bottom dead center position and operating along a first centerline of said frame;
a press center on said slide and aligned with said first centerline and said frame;
a first and a second guide member on said press machine;
a line between said first and said second guide member passing through said press center;
a crank shaft rotatably disposed on said frame;
an eccentric section on said crank shaft;
a connecting rod operably coupling said crank shaft to said slide;
a first link fixed to a first end of said crank shaft and perpendicular to said crank shaft;
a second link operably connecting said first link to said main gear;
a first angle operably defined between said first and second link whereby said first angle is at a maximum at said bottom dead center position and at a minimum at said top dead center position;
a rotation axis of said main gear and a rotation axis of said crank shaft are eccentric along a common center line, whereby a speed of said slide is at a minimum at said bottom dead center and a maximum at said top dead center position thereby increasing a pressing force at said bottom dead center position;



said drive mechanism operating said slide along said press center;
 said slide and said frame symmetrical about said press center and said first
centerline; and

 said frame being continuous and symmetrical about said first centerline whereby
said frame resists a rotational force during a pressing operation and eliminates an
operational gapping risk.